Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Coronavirus

Myocarditis more likely after infection than vaccination

Clare Wilson

HEART inflammation triggered by some covid-19 vaccines has been a concern, especially in younger people, but a preliminary study suggests that in those most affected, it is six times more likely to occur after a coronavirus infection than after vaccination.

In the past few months, some cases of this condition, known as myocarditis, have been recorded following the use of the Pfizer/BioNTech and Moderna vaccines. This has prompted concern particularly in the US and Israel, as these two countries have led the way in vaccinating younger people.

450
cases of myocarditis per million covid-19 cases in young males

The reaction happens most often in men and boys aged under 30 after their second dose, and is usually seen within 10 days, says Alma Iacob at Imperial College London. But many health bodies around the world say the benefits of vaccination still outweigh the risks for most people.

Now a study in the US has analysed how often myocarditis occurs following infection with the coronavirus. Researchers analysed the records of healthcare organisations that cover a fifth of the US population. They found that, during the first 12 months of the pandemic, males aged 12 to 17 were most likely to develop myocarditis within three months of catching covid-19, at a rate of about 450 cases per million infections.

This compares with 67 cases of myocarditis per million males of the same age following their second dose of a Pfizer/BioNTech or Moderna vaccine, according to figures from the US Advisory Committee on Immunization Practices. Researchers added together cases after first and second doses to reach a total rate of 77 cases per million in this male age group triggered by vaccination, a sixth that seen after infection.

"If you're focused on heart inflammation, the safer bet is to take the vaccine," says Mendel Singer at Case Western Reserve University in Ohio, who helped carry out the study.

Signs of myocarditis include chest pain, breathlessness and palpitations. Symptoms range from so mild that they go unnoticed to severe, involving permanent heart damage or death. However, extreme forms are rare and no fatalities have been reported after vaccination in the US.

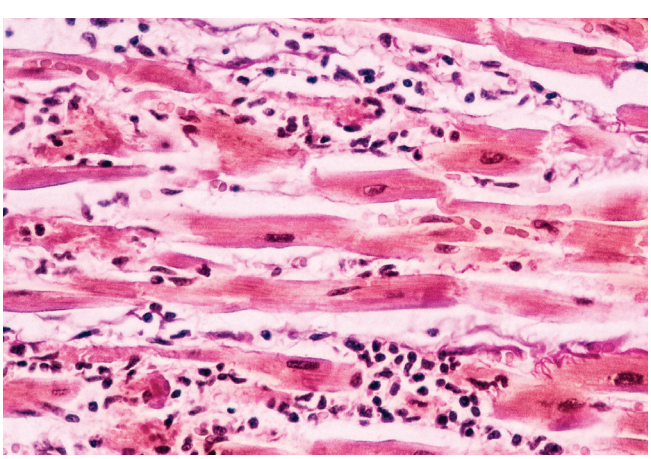
The causes of myocarditis are unclear. One idea is that it occurs when the immune system attacks the heart, but this hasn't been proven. Neither is it known why it happens most often in younger males.

Myocarditis involves the inflammation of heart muscle tissue

Mild cases are usually treated with over-the-counter anti-inflammatory drugs such as ibuprofen and most people recover within a few months, says Iacob. Other triggers of the condition include flu and the flu vaccine, some medications and some illegal drugs.

The small risk of myocarditis after the Pfizer/BioNTech vaccine is one reason why the UK's Joint Committee on Vaccination and Immunisation (JCVI) hasn't yet recommended this vaccine – the only one licensed for use in under-18s in the UK – for most children aged 12 and over. While countries such as Ireland and the US are letting teenagers get vaccinated, the JCVI said in July that only younger people who are highly vulnerable or living with someone with a weak immune system could have the jab.

Iacob says people who have been vaccinated or had covid-19 should be aware of possible symptoms of myocarditis, especially chest pain that is burning or sharp and worsens on changing position. ▮



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Solar system

Comet's dust trail could rain down on Venus in December

Will Gater

A COMET approaching the sun from the outer solar system might sweep a trail of dust particles over Venus when it swings into the inner reaches of our planetary neighbourhood this December.

On 18 December, Comet C/2021 A1 (Leonard) will zip past Venus at what is, in astronomical terms, a hair's-breadth distance of just 4.3 million kilometres. As Venus continues on its orbital path, it will move through a swathe of space close to where the comet was about 72 hours earlier.

Computer modelling suggests this region could contain dusty material that has been thrown off C/2021 A1 as it moves through space and that could now be getting swept along in the icy object's wake.

"This is the closest comet encounter to Venus on record in at least the last 50 years or so," says Qicheng Zhang at the California Institute of Technology, who is leading a team studying the event.

Although no one knows for sure if there really are dust particles being left in the darkness behind the comet, any that are in the right place will rain down on Venus, creating meteors in the planet's skies. If rarer, exceptionally bright meteors called bolides materialise, it may even be possible for Earth-based telescopes to image those fireballs as flashes on Venus's nightside (arxiv.org/abs/2107.12370).

But that would be a challenging observation, says Zhang, as there is a narrow observing window and researchers would have to contend with interference from the light scattered off the cloud tops on Venus's dayside, which would be partially in view from Earth.

Another option is Japan's Akatsuki spacecraft, which is orbiting Venus, although its instruments might not be sensitive enough to pick up signs of any meteors that occur. ▮